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(54) Abstract Title
Nearby mobile phone location

(57) A mobile consults a memory store relating to the identities of other phones, in order to provide an indication, when certain rules are fulfilled, that one or more of the other communications devices is within a set range. The rule may be that the other mobiles have been identified a predetermined number of times, or that the other mobiles were identified at particular times (during work, weekends) or in particular locations (workplace, home). In this way, a user may build up a list of identities of other mobiles used by friends, colleagues and associates. The location of these people may be indicated when they are nearby. The subsets of identified persons may be automatically determined based upon interrelationships between the mobiles.

GB 2 368 498 A

COMMUNICATIONS APPARATUS AND METHOD

The present invention relates to an apparatus and method for indicating the local presence of a communications device, such as a mobile telephone or personal digital assistant (PDA) or the like, belonging to a predetermined person or persons selected from a predetermined group of persons, the selection of the person or persons being managed automatically.

Location-based communications services are becoming more prevalent in connection with various devices, most notably mobile telephones, where a mobile telephone network is able to locate a given mobile telephone to within a predetermined degree of accuracy, possibly a few metres. Furthermore, modern electronic communications devices, including mobile telephones, are now equipped with non-network communications protocols, such as Bluetooth® or similar, whereby the communications device is able to determine the local presence of other electronic communications devices.

While this ability to locate an electronic communications device has many advantages, there remains a need for managing privacy. For example, although users of such a device may be happy for their friends to know where they are, they may be less willing for this location information to be available to unknown third parties or the like. Furthermore, if a user is in the same locality as a close friend having a similar electronic communications device, they may both wish the electronic communications devices to indicate their proximity so that the user and his or her friend can meet. However, the user may not wish his or her presence to be indicated to another user who is not such a good friend.

It is apparent that there is a growing need to manage "levels" or "shells" of privacy, for example to indicate whether certain people fall into the class of "good friend" or "trusted associate" or whether they are classified as people to whom the user does not want his or her presence to be indicated. This information could be updated

manually by the user, but this is cumbersome and the information is likely always to be out of date.

5 A technique used by World-Wide Web search engines to identify and rank websites in order of likely importance and relevance is to define the importance of a website by the number of other websites to which it is linked to or by which are also defined as "important". Although this definition of importance is somewhat circular, it is nevertheless a useful and powerful concept.

10 According to a first aspect of the present invention, there is provided an electronic communications device adapted to be wirelessly linked to other electronic communications devices, the electronic communications devices each having a distinct identity and being individually locatable by a network or identifiable by each other when in relative proximity, wherein the electronic communications device is
15 adapted to access a memory in which is stored data relating to the identities of at least a predetermined number of the other electronic communications devices and to provide an indication, when certain rules are fulfilled, when one or more of the other electronic communications devices is in a location within a predetermined distance of a location of the electronic communications device.

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According to a second aspect of the present invention, there is provided a method of identifying a uniquely-identifiable electronic communications device to another uniquely-identifiable electronic communications device, wherein the electronic communications device has access to a memory of identities of at least a
25 predetermined number of other electronic communications devices and wherein the electronic communications device provides an indication, when certain rules are fulfilled, when one or more of the other electronic communications devices is in a location within a predetermined distance of a location of the electronic communications device.

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The predetermined distance may be 5m, 10m, 20m, 30m or more, depending on the nature of the electronic communications devices. In some embodiment, the predetermined distance may be defined as a maximum dimension of a room or building within which the electronic communications devices may be temporarily located.

The rules may be defined such that an indication is provided when the other electronic communications device is one which has been identified by the electronic communications device more than a predetermined number of times. In other words, the electronic communications device may only provide an indication of the proximity of one of the other electronic communications devices when that other electronic communications device has been previously identified to be proximate to the electronic communications device on more than a predetermined number of occasions. The number of times or occasions may be chosen appropriately by a user, and may be at least five, at least ten, at least twenty, at least fifty or any other number. In this way, an electronic communications device can build up a list of other electronic communications devices carried by other people with whom a person carrying the device is regularly in contact, such as friends or work colleagues. In a preferred embodiment, the presence of the electronic communications device is reciprocally indicated by the other electronic communications device, although it may be advantageous for this feature to be selectively operable. In this way, a user of an electronic communications device can be alerted to the presence of "friendly" associates who are carrying similarly-configured electronic communications devices.

Preferably, the electronic communications device is adapted to allow a user to select which of the other electronic communications devices are identified to the user when in proximity thereto. For example, the presence of one of the other electronic communications devices may be indicated on a display, the display further providing identification information regarding a user of the other device. The user of the electronic communications device may then make a choice as to whether he wishes to be identified to the user of the other device, and if so, may press a key on his device

or suchlike so as to set the identity of the other device in the memory with a flag indicating that the other device is one which is to be identified in future.

5 In a particularly preferred embodiment, the memory to which the electronic communications device has access and in which the identities of the other electronic communications devices and their associated users are stored may organise the identity data in a number of "shells" or subsets. For example, there may be different identity categories for personal friends, work colleagues, business associates and so forth. These "shells" or subsets may be constructed largely automatically, again
10 based on location and time. For example, a given electronic communications device can automatically make users of other electronic communications devices members of "shells" or subsets such as "WORK" or "HOME" simply by detecting an unusual clustering of frequency time-and-space presences. The electronic communications device can then be operated by the user thereof so as to know that a given location is
15 called "HOME", and another given location is called "WORK", for example, thus providing for an easy human-machine interface.

This concept may be extended to second and subsequent orders, in that if the electronic communications devices share data stored in their automatically-or-
20 manually-determined "shells" or subsets (possibly via a communications network) then it is possible to define a selectable rule that members of the "shells" or subsets of a second electronic communications device can be made members of the "shells" or subsets of a first electronic communications device which includes the second electronic communications device in one of its own "shells" or subsets. It would
25 then be possible for a user to sit in a room, for example, and to operate his or her electronic communications device to locate someone nearby carrying another electronic communications device and with whom he or she has a direct or indirect (location-based) relationship. The electronic communications device may be operable to explain the connection by displaying how the various members of the
30 "shells" or subsets are linked, e.g. "Person A is present. He used often to be at "WORK" with Person B, who is often at "WORK" with you now".

The user of the electronic communications device may selectively activate each of these "shells" or subsets depending on his personal circumstances. For example, the user may be happy to identify and be identified by his work colleagues and business associates during working hours, but may prefer that only his personal friends are identified during the evenings and at weekends.

It is also possible to associate the memory with an electronic diary such as that provided by Microsoft as part of its Outlook software package. When entering details of future meetings and appointments, data identifying electronic communications devices carried by people who the user is to meet can also be entered. In this way, it is possible for the electronic communications device to indicate the proximity of another electronic communications device carried by a person with whom the user will be spending time in future. So, for example, the device may indicate that a person who the user will be meeting in two weeks' time at a conference is actually sitting in the same restaurant as the user before the meeting actually takes place.

The electronic communications device may be a mobile telephone, personal digital assistant, electronic pager, portable computer or other suchlike device. The electronic communications device may be adapted to be wirelessly linked to a network of other electronic communications devices and/or may be adapted to be wirelessly linked directly to other electronic communications devices, for example by way of the Bluetooth® peer-to-peer communications protocol.

CLAIMS:

1. An electronic communications device adapted to be wirelessly linked to other electronic communications devices, the electronic communications devices each
5 having a distinct identity and being individually locatable by a network or identifiable by each other when in relative proximity, wherein the electronic communications device is adapted to access a memory in which is stored data relating to the identities of at least a predetermined number of the other electronic communications devices and to provide an indication, when certain rules are fulfilled, when one or more of the
10 other electronic communications devices is in a location within a predetermined distance of a location of the electronic communications device.
2. A device as claimed in claim 1, adapted such that the indication is provided when the other electronic communications device is one which has been previously
15 identified by the electronic communications device to be in proximity thereto on a predetermined number of occasions.
3. A device as claimed in claim 2, adapted such that the predetermined number of occasions is at least five.
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4. A device as claimed in any preceding claim, adapted to allow a user to select which of the other electronic communications devices are identified and their presence indicated when in proximity thereto.
- 25 5. A device as claimed in any preceding claim, wherein the memory is subdivided into a plurality of subsets, each distinct subset containing data relating to the identities of a distinct group of one or more of the other electronic communications devices.

6. A device as claimed in claim 5, wherein the identities of the other electronic communications devices are automatically allocated to predetermined subsets depending on a location and/or time of previous identification.

5 7. A method of identifying a uniquely-identifiable electronic communications device to another uniquely-identifiable electronic communications device, wherein the electronic communications device has access to a memory of identities of at least a predetermined number of other electronic communications devices and wherein the electronic communications device provides an indication, when certain rules are
10 fulfilled, when one or more of the other electronic communications devices is in a location within a predetermined distance of a location of the electronic communications device.

8. A method according to claim 7, wherein the indication is provided when the
15 other electronic communications device is one which has been previously identified by the electronic communications device to be in proximity thereto on a predetermined number of occasions.

9. A method according to claim 8, wherein the predetermined number of
20 occasions is at least five.

10. A method according to any one of claims 7 to 9, wherein a user may select which of the other electronic communications devices are identified and their presence indicated when in proximity thereto.

25 11. A method according to any one of claims 7 to 10, wherein the memory is subdivided into a plurality of subsets, each distinct subset containing data relating to the identities of a distinct group of one or more of the other electronic communications devices.

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12. A method according to claim 11, wherein the identities of the other electronic communications devices are automatically allocated to predetermined subsets depending on a location and/or time of previous identification.

5 13. An electronic communications device substantially as hereinbefore described.

14. A method of identifying a uniquely-identifiable electronic communications device to another uniquely-identifiable electronic communications device substantially as hereinbefore described.

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Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): H4L (LDPB, LRPLS, LDDDM, LESF)

Int Cl (Ed.7): H04Q 7/22

Other: Online: WPI, EPODOC, JAPIO, INSPEC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	WO 00/22860 A1 (DEGNBOL) See page 3 lines 17-21	1, 4, 5, 7, 10, 11
X	WO 98/00988 A2 (ERICSSON) See page 5 line 20 - page 6 line 5	1, 4, 7, 10
X	US 5689809 (GRUBE ET AL) See column 2 line 62 - column 3 line 37	1, 4, 7, 10

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.
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A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
B Patent document published on or after, but with priority date earlier than, the filing date of this application.

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